TECHNICAL NOTES

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Further Observations on Seedbed Scarification Show Benefits to Northern Red Oak Were Temporary

Scarification of the soil improved the initial establishment of northern red oak reproduction and other associated tree species on a test area in the Hardies Creek Timber Harvest Forest.[1/] A reexamination of the same 10 transects 5 years later shows that this initial advantage in stocking has been largely lost.

Thus, in 1958, the total regeneration of the various hardwoods amounted to 5,199 trees per acre for the disked plots and 4,450 for the untreated checks (table 1). This means that those areas which were left in their natural state now have 86 percent as many small trees per acre as the strips which were torn up with a disk in 1951. Comparable data for 1953 were 2,701 versus 4,849 seedlings per acre or a 56:100 ratio in favor of scarification.

Table 1.--Comparative data for disked and undisked transects

No. of growing seasons and treatment	Northern red oak seedlings: Av. no. per acre	Av. total height, inches[1/]	Percent of milacres stocked with one or more seedlings	No. of seedlings of other hardwoods per acre
Two (1953):				
Disked	3,162	4.2	85	1,687
Not disked	940	6.3	60	1,761
Seven (1958):				
Disked	2,762	7.3	82	2,437
Not disked	2,500	7.7	79	1,950

1/ Based on individual measurements of all seedlings on all sample milacre quadrats.

An especially good response was obtained from disking in the bumper crop of northern red oak acorns on the ground in the fall of 1951 (3,162 and 940 red oak seedlings per acre for disked and undisked areas, respectively, in 1953). Therefore, it was concluded at that time that definite silvicultural benefits had been obtained by a partial tillage of the forest floor.

1/ Scholz, Harold F. 1955. Effect of scarification on the initial establishment of northern red oak reproduction. Lake States Forest Expt. Sta. Tech. Note 425, 2 pp. (Processed.)

These fluctuations in the amount of hardwood regeneration on the two sets of plots have been associated with certain land-use changes and modifications in the structure of the main stand. Thus, prior to 1951 when the area was in private ownership, the Timber Harvest Forest was heavily grazed by dairy cows, whereas it was completely protected from livestock during the 7-year period ending in 1958.

There is tangible evidence that this extended protection has benefited both the forest stand and the site. An accumulation of leaves and twigs provides surface protection that formerly was lacking; annual weeds and agricultural grasses gradually are being supplanted by vegetation more typical of undisturbed mixed-oak woodlands; and there is a noticeable improvement in the tilth of the upper soil horizons.

Logging in this part of the demonstration forest has been limited to a shelterwood preparatory cut which took out about 30 trees per acre and reduced the basal area of the sawtimber stand from 139.8 square feet to 106.8 square feet (a reduction of 23.6 percent). About two-thirds of the trees harvested were in the suppressed and intermediate crown classes, and consequently their elimination from the stand did not open the main canopy as much percentagewise as it reduced the basal area.

The cessation of grazing and a moderate reduction in the number of sawtimber stems per acre may or may not account for the changes which have taken place in the hardwood regeneration complex on the disked and undisked plots during the last 5 years. Additional studies will be needed not only to determine this point, but also to explore the entire field of "oak-ecology" and the extent to which it can be manipulated to attain specific silvicultural objectives.

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